

# Audit



# Report

OFFICE OF THE INSPECTOR GENERAL

NAVY ACQUISITION PLANNING FOR  
FIELDING WEAPON SYSTEMS

Report No. 97-053

December 20, 1996

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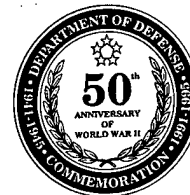
### **Acronyms**

AN/SQQ-89  
LCAC  
MAMs

Surface Antisubmarine Warfare Combat System  
Landing Craft, Air Cushion  
Maintenance Assistance Modules



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Report No. 97-053

December 20, 1996

**MEMORANDUM FOR UNDER SECRETARY OF DEFENSE FOR ACQUISITION  
AND TECHNOLOGY  
ASSISTANT SECRETARY OF THE NAVY (FINANCIAL  
MANAGEMENT AND COMPTROLLER)**

**SUBJECT: Audit of Navy Acquisition Planning for Fielding Weapon Systems  
(Project No. 5AG-0027.01)**

## **Introduction**

We are providing this report for your information and use. This report is the second of two reports on acquisition planning for fielding weapon systems. The first report, Inspector General, DoD, Report No. 96-096, "Army Acquisition Planning for Depot Maintenance," April 17, 1996, addresses Army planning for inter-Servicing depot maintenance support. Supportability planning is a continuous process occurring throughout the development and production phases of the acquisition cycle to ensure that weapon systems are handed off to the users with the necessary infrastructure and support capabilities. Because a weapon system incurs most of its cost after the system is fielded, program managers should plan for the operational support of the system before fielding. Planning should begin early in the acquisition cycle for program managers to make design and other decisions to positively impact the system's life-cycle cost.

## **Audit Results**

Acquisition supportability planning was effective for three of the five systems reviewed: the Naval Combat Search and Rescue-Special Warfare Support Helicopter, the Navy Amphibious Assault Ship (LHD-1), and the Marine Corps Harrier II Plus aircraft. The remaining two systems had deficiencies related to the availability of spare parts for the Navy Landing Craft, Air Cushion, and duplicative procurements of maintenance assistance modules for the Surface Antisubmarine Warfare Combat System. During the audit, program officials for the Landing Craft, Air Cushion, had undertaken several corrective actions that should resolve the support problems. For the Surface Antisubmarine Warfare Combat System, we provided input to the Navy Audit Service for followup in conjunction with its recently completed audit on the Navy management of maintenance assistance modules.

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## **Audit Objective**

The audit objective was to determine the adequacy of the Services' acquisition planning for fielding weapon systems. Specifically, the audit evaluated whether Navy and Air Force acquisition managers adequately developed and implemented plans to ensure effective transition of weapon systems to the user. We also reviewed the management controls related to developing and implementing transition plans. We identified Navy and Air Force weapon systems with supportability requirements that were in the engineering, manufacturing, and development phase or the production phase. We discontinued our review of the Air Force because those systems that we identified with supportability requirements either had been covered by recent audits or had fieldings that were nearly completed. The scope and methodology, including management controls assessment, is in Enclosure 1, and prior audit coverage related to the audit objective is in Enclosure 2.

## **Audit Background**

An effective and orderly transfer of weapon systems from the developer to the user requires that program managers conduct adequate supportability analyses during the early stage of and throughout a weapon system's acquisition cycle. Some factors that analyses should address include determining the levels of equipment and operational support personnel needed and determining the maintenance concept and spare parts replenishment process to be used.

DoD Regulation 5000.2-R, "Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs," March 15, 1996, requires program managers to conduct acquisition logistics planning, which includes supportability analyses, as an integral part of a weapon system's engineering process, at the start of an acquisition and continuing throughout program development.

Chief of Naval Operations Instruction 4423.4A, "Provisioning of End Items of Material," June 3, 1988, implements DoD policy relative to secondary item inventory management and requirements determination. The instruction provides the basis for the development of provisioning data used to compute initial spares requirements. Experience has shown that program managers' failure to fully develop provisioning data during system development and initial fielding results in inadequate spare and repair parts support for new or upgraded systems entering the inventory of the Navy.

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## Discussion

We evaluated acquisition planning for five Navy weapon systems that were currently being fielded to users. Acquisition planning was effective for three systems, the Naval Combat Search and Rescue-Special Warfare Support Helicopter, the Navy Amphibious Assault Ship (LHD-1), and the Marine Corps Harrier II Plus aircraft. Program officials for the three systems had developed and implemented appropriate fielding plans for support and test equipment, adequately trained sufficient personnel, and conducted appropriate analyses of spare parts replenishment. Also, the systems had no design deficiencies that impacted users' support capabilities. A summary on the results of the review on the three systems is in Enclosure 3. For the remaining two systems, the Navy Landing Craft, Air Cushion (LCAC) had deficiencies related to the availability of parts because of insufficient provisioning planning at the time of fielding. Also, the Surface Antisubmarine Warfare Combat System had duplicative procurements of maintenance assistance modules because of inadequate coordination of requirements between the program manager and field engineering organizations.

**LCAC Program.** The LCAC is a high-speed, over the beach, ship-to-shore, amphibious vehicle capable of lifting weapons, equipment, cargo, and personnel associated with a Marine Corps air or ground task force. The craft is designed to operate from the amphibious well deck of ships and is being fielded at two Navy assault craft units located on the East and West coasts. The program is managed by the Program Executive Officer for Carrier Littoral Warfare and Auxiliary Ships, Naval Sea Systems Command. Initial fielding of the craft began in 1984. The Navy plans to procure 91 craft at a total cost of about \$2.4 billion, of which 81 craft have been fielded as of June 1996.

The LCAC program had significant support problems during its initial fielding. The program experienced a 3-year delay in achieving its material support date. The date, originally scheduled for April 1988, was delayed until November 1991 because essential aspects of the provisioning process were not accomplished. The LCAC prime contractor did not provide sufficient usage data to the Navy Inventory Control Point to establish supply support for LCAC spare parts and repairables. The contractor did not provide sufficient data because the program manager failed to ensure that the contractor produce an adequate logistics support analysis program before LCAC initial fielding. Also, the contractor did not provide the Navy with pertinent provisioning data needed to conduct parts failure analyses. As a result, the Navy assault craft units have experienced critical shortages of parts and extended downtime waiting for parts.

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**Spare Parts Availability.** Many parts that affect LCAC mission capability are not readily available at the Navy Inventory Control Point or in the Defense Logistics Agency supply system. The LCAC was built with many nonstandard Navy parts that the Navy supply system did not stock. Also, many parts are of 1960s technology and are no longer being manufactured. Replacement of the parts requires extended waiting periods. Because the Navy assault craft units have more LCACs than crews, the supply problems have not impacted their mission capability. At the time of our audit, the program office had several initiatives underway to address the problems. The program office is collecting and analyzing fleet failures related to LCAC operations and maintenance. That allows the program office to establish a documented history on failed components and to identify necessary corrective actions to reduce failures and subsequent maintenance costs. Also, the Navy is incorporating the data in the LCAC Service Life Extension Program, which the program office recently initiated to replace LCAC obsolete and nonstandard Navy parts. We believe that the program office's actions appropriately address LCAC deficiencies and will resolve existing problems.

**Spare Parts Service Life.** Some LCAC parts were not meeting the anticipated service life requirement, resulting in frequent parts replacement and increased maintenance cost. LCAC program office analyses of high dollar value replacement parts showed that some parts were achieving no more than 34 percent of their projected "Mean Time Between Failures" goals. Program officials attributed the disparities to the lack of quality in the prime contractor's logistics support analyses. At the time of the audit, the program office had a reengineering effort underway to identify and replace those items that were not meeting the desired service life goals. We considered the effort appropriate.

**Surface Antisubmarine Warfare Combat System.** The Surface Antisubmarine Warfare Combat System (AN/SQQ-89) is an integrated, stand alone, surface ship, antisubmarine warfare combat system installed on frigates, cruisers, and destroyers. AN/SQQ-89 integrates the Mark-116 Fire Control System and data from various airborne and seaborne sonars to increase the effectiveness of antisubmarine warfare ships. The first units were fielded in FY 1985 with the last fielding projected for FY 2010. Total program acquisition cost is projected at about \$4 billion.

AN/SQQ-89 is a consolidation of multiple subsystems that have common embedded equipment. The embedded equipment uses maintenance assistance modules (MAMs) to troubleshoot for equipment failures. For most AN/SQQ-89 shipboard installations, the system is generally collocated with other major weapon systems having similar embedded equipment. Program managers for the various weapon systems develop their individual MAMs requirements without considering that maintenance personnel aboard ship can share the same MAM among several weapon systems when troubleshooting equipment failures.

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Because Navy officials do not consider MAMs sharing among systems when developing MAMs requirements, program managers are procuring duplicative MAMS at the time of weapon systems' initial fieldings. We did not continue to pursue the issue because the Naval Audit Service was completing a review of the Navy management of MAMs. We referred the issue to the Naval Audit Service for follow-up in conjunction with its effort.

### **Management Comments**

We provided a draft of this report on October 28, 1996. Because the report contains no findings or recommendations, management comments were not required, and no comments were received. Therefore, we are publishing this report in final form.

We appreciate the courtesies extended to the audit staff. For additional information on this report, please contact Mr. James L. Koloshey, Audit Program Director, at (703) 604-8961 (DSN 664-8961). Enclosure 4 lists the distribution of the report. The audit team members are listed inside the back cover.



Robert J. Lieberman  
Assistant Inspector General  
for Auditing

Enclosures

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## Scope and Methodology

**Scope.** We selected Army, Navy, and Air Force weapon systems that had significant supportability requirements and that were in the engineering and manufacturing development or production phase from October 1993 through February 1995. In the first phase of the audit, we reviewed supportability planning for Army weapon systems and issued Inspector General, DoD, Report No. 96-096, "Army Acquisition Planning for Depot Maintenance," April 17, 1996. In the second phase of the audit, we initially reviewed Navy and Air Force weapon systems that had supportability requirements and that were in the engineering, manufacturing, and development phase or the production phase. We modified the audit scope to include only the Navy LCAC, AN/SQQ-89, the Naval Combat Search and Rescue-Special Warfare Support Helicopter, the Navy Amphibious Assault Ship (LHD-1), and the Marine Corps Harrier II Plus aircraft because the Air Force systems that were identified with supportability requirements had been covered by recent audits or had fieldings that were nearly completed.

**Methodology.** We reviewed documentation and guidance dated from August 1981 through May 1996 that were pertinent to the fielding of the five weapon systems selected for review. We interviewed military personnel at fleet and engineering field organizations. We also interviewed cognizant personnel within the various offices of the Secretary of Defense; Secretary of the Navy; Naval Air Systems Command; Naval Sea Systems Command; and headquarters, Marine Corps. We did not use statistical sampling procedures or computer-processed data.

**Contacts During the Audit.** We visited or contacted individuals and organizations within the DoD and Northrop Grumman Logistics Support Facility, Chesapeake, Virginia. Further details are available on request.

**Audit Period and Standards.** We performed this program audit from November 1995 through July 1996 in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD. We included tests of management controls considered necessary.



## Scope and Methodology

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**Management Control Program.** DoD Directive 5010.38, "Internal Management Control Program," April 14, 1987,\* requires DoD managers to implement a comprehensive system of management controls that provides reasonable assurance that programs are operating as intended and to evaluate the adequacy of those controls.

**Management Control Program Review.** Inspector General, DoD, Report No. 96-028, "Implementation of the DoD Management Control Program for Major Defense Acquisition Programs," November 28, 1995, addresses the effectiveness of the management control program that the Defense Acquisition Executive and the Military Departments' Acquisition Executives used for major Defense acquisition programs. The report concludes that the acquisition community had not effectively integrated DoD Management Control Program requirements into its management assessment and reporting processes.

As a result of the report recommendations, the Under Secretary of Defense for Acquisition and Technology integrated DoD Directive 5010.38 requirements into DoD Directive 5000.1, "Defense Acquisition," and DoD Regulation 5000.2, "Mandatory Procedures for Major Defense Acquisition Programs (MDAPS) and Major Automated Information System (MAIS) Acquisition Programs," March 15, 1996. Acquisition managers now use program cost, schedule, and performance parameters as control objectives to implement the DoD Directive 5010.38 requirements. Managers are to identify material weaknesses through deviations from approved acquisition program baselines and exit criteria in the "Defense Acquisition Executive Summary Report."

**Results of Review.** Because of Inspector General, DoD, Report No. 96-028, we limited our review of management controls to those necessary for assessing supportability planning for weapon system fieldings. We identified no material weaknesses in management controls relative to the fleet introduction of the weapon systems reviewed. We did not assess implementation of the management control program in the Naval Combat Search and Rescue-Special Warfare Support Helicopter program office because the program had limited production with insignificant supportability planning.

As of June 1996, only the Navy Amphibious Warfare Program Office had implemented a program for assessing management controls. That office had classified Integrated Logistics Support as medium risk. The AV Weapon System Program Management Office had not developed a management control assessment program. The Surface Ship Antisubmarine Warfare Combat System Program Management Office implemented a management control assessment program in July 1996.

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\*DoD Directive 5010.38 has been revised as "Management Control (MC) Program," August 26, 1996. The audit was performed under the April 1987 version of the directive.

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## **Prior Audits and Other Reviews**

The General Accounting Office has not issued any reports within the last 5 years addressing planning for the fielding of weapon systems to active Navy combat units. The Office of the Inspector General, DoD, issued a report that addressed Army acquisition planning. The Naval Audit Service issued a report that addressed AN/SQQ-89 spares and repair parts inventory.

### **Inspector General, DoD**

Inspector General, DoD, Report No. 96-096, "Army Acquisition Planning for Depot Maintenance," April 17, 1996, discusses Army acquisition managers' use of the Joint Logistics Commanders Depot Maintenance Inter-Servicing Program during supportability planning. The report found that depot maintenance planning for new or upgraded weapon systems was inadequate for 12 of 19 systems reviewed. The report recommended that the Assistant Secretary of the Army for Research, Development, and Acquisition assign the major subordinate command's Maintenance Inter-Servicing Office as a member of the Program Integrated Product Team to assist the program manager in depot maintenance inter-Servicing planning. The Army concurred in principle with the recommendation and agreed to emphasize the importance of depot maintenance inter-Servicing in the rewrite of Army Pamphlet 70-3, "Army Acquisition Procedures," scheduled for the third quarter FY 1997.

### **Naval Audit Service**

Naval Audit Service Report No. 030-S-94, "Spares and Repair Parts Inventory at the AN/SQQ-89(V) Logistics Support Center, Syracuse, NY," February 24, 1994, states that excess spares and repair parts were being retained in the AN/SQQ-89 logistics support center inventory and that \$1.6 million in Navy Ships Parts Control Center purchases could be eliminated if excess or unneeded items were turned in. The report recommended that the Program Executive Officer for Undersea Warfare turn in excess or unneeded items to the Navy Inventory Control Point (formerly, the Ship Parts Control Center) and that the Navy Inventory Control Point cancel procurements associated with excesses turned in by the Program Executive Officer for Undersea Warfare. Both the Program Executive Officer for Undersea Warfare and the Navy Inventory Control Point concurred with the finding and implemented the recommended actions.

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## Weapon System Assessments

The following is a synopsis of the results of the review for three of the five weapon systems for which acquisition supportability planning for the transfer of the systems to the fleet was considered adequate.

**Naval Combat Search and Rescue-Special Warfare Support Helicopter.** The aircraft is a medium-range recovery helicopter designed to provide anti-submarine squadrons and Naval reserve helicopter combat support squadrons with the capability to perform combat search and rescue and special warfare support missions. Originally, the Navy acquired 18 helicopters for the Navy Reserve. However, during the Persian Gulf War, the Navy determined a need for the helicopter in active-duty squadrons. In FY 1992, Congress approved 24 helicopters for the active Navy, which are scheduled to be fully fielded by October 1996. Our review revealed no deficiencies in supportability planning for the craft designated for the active Naval forces.

**Navy Amphibious Assault Ship (LHD-1).** The Navy Amphibious Assault Ship (LHD-1) is designed to facilitate the embarkation and deployment of a Marine Landing Force. The initial ship was delivered in May 1989. A total of four ships have been built and are in the fleet with three under contract. Our review revealed no issues related to supportability planning deficiencies during fleet introduction.

**Marine Corps Harrier II Plus Aircraft.** The Marine Corps Harrier II is a vertical/short takeoff and landing, light attack jet aircraft. The primary mission of the Harrier II is to provide responsive close air support. The audit focused on the night attack, radar version of the aircraft, commonly called the Harrier II Plus. The Harrier II Plus experienced shortages of support equipment during initial fielding. We determined that the shortages resulted from changes in the user's operational requirements rather than deficient acquisition planning for weapon system support. As of June 1996, the Naval Air Warfare Center had initiated procurement actions to resolve the shortages. We considered the actions appropriate.

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